

By Bernie Dodge

Subject: Any

Audience: Teachers, technology coordinators, teacher educators

Grade Level: 3–12 (Ages 8–18)

Technology: Internet/Web, e-mail

Standards: *NETS•S* 4, 5. *NETS•T* II, III. (Read more about NETS at www.iste.org—select Standards Projects.)

Five Rules for Writing a Great WebQuest

Since it was first developed in 1995 by Bernie Dodge with Tom March, the WebQuest model has been incorporated into hundreds of education courses and staff development efforts around the globe (Dodge, 1995). A WebQuest, according to <http://edweb.sdsu.edu/webquest/overview.htm>, is

an inquiry-oriented activity in which most or all of the information used by learners is drawn from the Web. WebQuests are designed to use learners' time well, to focus on using information rather than looking for it, and to support learners' thinking at the levels of analysis, synthesis, and evaluation.

WebQuests are appealing because they provide structure and guidance both for students and for teachers. The stated ideal of engaging higher-level thinking skills—though making good use of limited computer access—seems to resonate with many educators.

A quick search of the Web for the word *WebQuest* will turn up thousands of examples. As with any human enterprise, the quality ranges widely. Many WebQuests were created hurriedly to complete a class assignment. Others appear to have been developed over a longer time and thoughtfully refined each year while being implemented. Some of the lessons that label themselves WebQuests do not represent the model well at all and are merely worksheets with URLs.

By closely analyzing what's out there, I've identified five general bits of advice that will help anyone create WebQuests that are head and shoulders above the rest. Thanks to some wrestling with the alphabet, the five guiding principles can be captured in the word *FOCUS*:

Find great sites.
Orchestrate your learners and resources.
Challenge your learners to think.
Use the medium.
Scaffold high expectations.



One thing that distinguishes a good WebQuest from a great one is the quality of the Web sites it uses. What makes for a great site? The answer varies with the learners' ages, WebQuest topic, and specific learning you hope to bring about. In general, though, you'll want to find sites that are readable and interesting to your students, up-to-date and accurate, and come from sources your students wouldn't ordinarily encounter in school.

Master a search engine. How do you find great sites? It helps, first of all, to fully master one or two of the most powerful search engines. It's somewhat a matter of personal preference, but as of this writing, most savvy users would include AltaVista®, Google™, and perhaps Northern Light™ at the top of their lists. (See Resources on page 10.)

Most people do their searching by typing a few words into one search engine (e.g., Yahoo!® or Dogpile®) and then plow through a blizzard of irrelevant sites. It's much better to learn the quirks and advanced search techniques of the better search engines to get what you're after faster. By mastering just a few commands, you can quickly become a better searcher than most of the Web-using public. One Web page many have found useful is Seven Steps Toward Better Searching.

Probe the deep Web. According to one report (Bergman, 2000), more than 550 billion Web pages now exist, only 1 billion of which turn up using the standard search engines. What's left is a hidden "deep Web" that includes archives of newspaper and magazine articles, databases of images and documents, directories of museum holdings, and more. Though some of this information can be rather obscure, you can find items that add a unique and interesting touch to a WebQuest.

Take, for example, a WebQuest about whales. A newspaper account of people trying to save a beached whale would add human interest and drama to an otherwise routine lesson. By searching the deep Web you might find a link to a page in Thomas (a tool to search U.S. legislative information on the Internet, provided by the Library of Congress) describing legislation from the 106th Congress designed to protect whales. Searching through the Library of Congress's American Memory Collection might lead you to a letter by Thomas Jefferson on whaling and a picture of a whale skeleton.

Searches of the TV Episode Guide and the Internet Movie Database will take you to pages showing how whales have been portrayed in popular culture. Including such sites drives home the fact that what you are teaching is important in the world outside school walls. Where do you find such accounts? I maintain a page called "Specialized Search Engines and Directories" that might help you find these resources off the beaten path.

Don't lose what you find. A practical problem in lining up great sites is keeping track of them. Most teachers do their work at more than one computer. Sometimes you'll be searching at your desk at school. Other times you'll be at

your home machine, and someone will e-mail you a great site. You might look over the shoulders of your students and find something great you want to use in a future lesson. So how do you store and access your finds so that you can get to them when you need them? Web-based bookmark servers such as Backflip are a boon to teachers. Once you've set up a free account, you can log in from any computer and look at or add to your list of bookmarks. One especially useful benefit is that you can set up categories and subcategories and put each bookmark into some kind of organizational framework as you find them.



ORCHESTRATE LEARNERS AND RESOURCES

Teachers who survive the first few years on the job are masters of organizing children and resources. The experience of not having enough books, globes, or frogs for students teaches one quickly to arrange activities so that resources can be shared. The same wisdom can be applied to problems of less-than-optimal computer access. A great WebQuest is one in which every computer is being used well and everyone has something meaningful to do at every moment.

Organizing resources. As of this writing and for the foreseeable future, there are not enough computers to go around. The creative response to that is to organize your activities so that whatever access you do have is used well. Here are some of the possibilities:

- A single computer can be used to drive whole-class discussion and exploration with the teacher, not the students, controlling the pace.
- One to 10 computers can be used as learning stations for students to cycle through while others work offline.

- If the only access to the Internet students have is by a scheduled (and limited) set of lab periods, then a well-orchestrated lesson frontloads that lab visit with offline activities so students are prepared to use lab time well.
- If all computers don't have Internet access, then students can access Web archives created on another computer and saved on their hard drives.

Organizing people. Designing a great WebQuest is also a matter of organizing your learners. Though having teams and roles for students to play is not a critical attribute of a WebQuest, practical considerations lead to group work being more common than not. Having more than a superficial knowledge of cooperative learning strategies has proved to be a useful background for WebQuest designers. According to Johnson and Johnson (2000), the critical attributes of a successful cooperative learning environment include the following:

- *Positive interdependence:* Learners perceive that they cannot succeed without each other.
- *Promotive interaction* (preferably face-to-face): Students help teach and applaud each other as they wrestle with authentic work.
- *Individual and group accountability.* The group is held accountable for completing the task, and each individual is held accountable for his or her part in the process.
- *Interpersonal and small group skills.* Most children (and many adults) need to be taught how to work together.
- *Group processing.* Conversation about how to improve the group's effectiveness is deliberately built into the process.

A well-orchestrated WebQuest has these qualities as well. Good designers recognize that much of the learning in a WebQuest takes place away from the computer as students teach, debate, and

debug each other's conceptualizations. Guidance on how to work together should be an integral element of the process section of the WebQuest. Find ready-made pages to support effective cooperation on the Process Guides page developed as part of the San Diego City Schools Patterns Project.

How do you create positive interdependence in a WebQuest? You create separate responsibilities by having learners read different Web pages or by having them read the same Web pages from differing perspectives. You can also divide the production responsibilities in ways that parallel production careers in adult life (e.g., scriptwriter, graphic artist, or producer). The trap to avoid is creating separate roles that do not result in information all members of the team will need to accomplish the end goal.



CHALLENGE YOUR LEARNERS TO THINK

We're passing through a period in which standardized test performance drives much of what happens in schools. At the same time, everything around us tells us that tomorrow's adults will need to analyze and synthesize information to succeed in most professions and to participate fully as citizens. It takes a gifted teacher to play both games at once, but it can be done. A WebQuest is not the vehicle for mastering a list of U.S. presidents and their terms of office, but it can provide an engaging and complex backdrop on which to hang bits of knowledge that would otherwise seem static and inert.

In an earlier era when content was more stable, mastering factual information might have been sufficient. Teaching about Canada before the Web, for example, would typically involve assigning individual provinces for stu-

dents to research in the library. Millions of students dutifully produced reports with titles such as “Manitoba: Land of the Crocus Bird” and forgot every word of it within weeks. In freshly wired classrooms today, the first impulse of many teachers is to treat the Web as an extension of the school library and to assign the same kind of research report. Typically, the thinking that goes into this kind of activity is simply a matter of paraphrasing and summarizing, even if the final report ends up as a Microsoft® PowerPoint® presentation. The loftier reaches of the brain go unused.

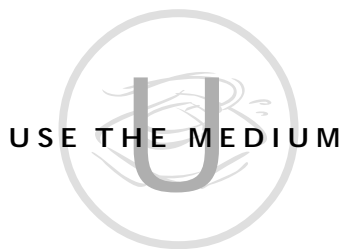
Taking your learners to task. How can we do better than that? The key element of a great WebQuest is a great task. It’s all about what we ask learners to *do* with information. Over the past six years, creative teachers have developed tasks that go well beyond retelling and engage their students in problem solving, creativity, design, and judgment. Find a list of these task types and examples on the WebQuest Taskonomy page. The page has proven useful in helping others see alternative ways to frame what they ask of their students.

Design. The topic of Canada, for example, was treated as a design task in the Design a Canadian Vacation WebQuest. The task given to students was to create an itinerary through Canada that would satisfy a given family of four, each of whom was interested in different things. Working in teams, students research possible destinations and learn to compromise to fit it all into a reasonable trip. One can imagine that the reports presented by each team would engage the rest of the class as well, because each vacation designed would represent a different set of trade-offs and discoveries. Not only is it likely that students would retain more about Canada, but they also get a taste of the give and take that their parents go through in similar circumstances.

Journalistic tasks. WebQuests have also been created based on a journalistic approach in which learners take on a persona and create a news account or simulated diary as if they were present at a particular time and place. In *We Were There*, for example, students portray delegates to the U.S. Constitutional Convention appearing on a talk show.

In *Witchcraft or Witchhunt*, students create two diaries in parallel: one portraying an accused witch, the other an accused Communist.

Persuasion amid controversy. Another approach is to look for authentic controversies in the world as a vehicle around which to organize the study of a topic. In *A Forest Forever*, students look at the contending uses for national forests. By taking on the perspectives of forest rangers, timber workers, off-road vehicle enthusiasts, and Sierra Club members and then crafting a persuasive message communicating that point of view, students learn to see things through multiple lenses.



These are just a few of the possible ways in which tasks can be designed to elicit higher-level thinking (and motivational energy). A great WebQuest goes beyond retelling.

The pedagogical structure of a WebQuest is not limited to the use of the Web. One can imagine a “BookQuest” in which a compelling problem or question is presented and the solution is created by dividing up and processing the information in a variety of books scattered around the classroom. Teachers with only one computer sometimes compensate by printing out selected Web pages so that students not seated

at computers will have something to read. These are compromises, though, and don’t fully exploit the medium. A WebQuest that’s fully flexing the model is one that could not be accomplished easily on paper.

People. What qualities are unique to the Internet? First, recognize that the Internet isn’t just a network of computers; it’s also a network of people. In addition to selecting interesting and appropriate Web pages for your students to read, line up humans with expertise to share. There are ask-an-expert sites for many fields of study. You might also use a parent volunteer. Busy parents might be willing to serve as mentors about a topic for a week or two by e-mail. Children in other classrooms can also serve as learning partners and sources of information. The ePALS site is an excellent way to connect with other schools. By creatively selecting and recruiting, you can bring other useful people into your lesson with a simple e-mail link.

Conversation. Another unique quality of the Internet is the fact that conversations can be captured and used as raw material for learning. The act of writing down one’s thoughts helps clarify them and opens them up to being refined and amended by others. You can add a page to your WebQuest that allows students to post their opinions and findings, and invite others outside your classroom to participate as well. The QuickTopic site allows you to add an interactive forum to any Web page in a matter of seconds.

Selective glitz. The Web is becoming a multimedia environment. In the next decade, the Web will begin to look less like a slick magazine and more like television. Though it’s critically important to avoid distracting your learners with dazzle and noise that serves no instructional purpose, it’s also important to take advantage of audio, video, and images on the Web when appropriate.

FOCUS: continued on page 58.

FOCUS: continued from page 9.

The FindSounds site lets you search for sounds using keywords such as *trolley*, *wolf*, or *eagle*. The addition of a Webcam view associated with your lesson (e.g., a street scene in London, a live view of a dolphin tank) can also add a great deal of interest. The Earthcam site will help you find Webcam views for almost any topic.



A great WebQuest asks students to do things they might not ordinarily be expected to do. If you've seen inner-city high school students re-enacting the Amistad Trial or hammering out a common position on coral-reef protection legislation, you know that learners can amaze us when they're given the right support. Scaffolding is a temporary structure used to help learners act more skilled than they really are. A great WebQuest builds scaffolding into the process as needed so that the bar of what students can produce can be raised.

Three types of scaffolding are in a WebQuest (Dodge, 2000): reception, transformation, and production. (See Scaffolding Tools in Resources on this page for specific examples of scaffolding tools.)

Reception. The Web allows us to put students in touch with resources that they might not have seen before. If learners are not fully prepared to extract information from that resource, then everything else in the lesson will be based on shaky ground. A reception scaffold provides guidance in learning from a given resource and retaining what was learned. Examples of reception scaffolds include observation guides, tips on how to conduct interviews, and online glossaries and dictionaries.

Transformation. WebQuests ask learners to transform what they read into some new form. Because this might not have been commonly experienced by learners in their earlier education, they might benefit by explicit help on such processes as comparing and contrasting, finding patterns among a number of similar objects of study, brainstorming, inductive reasoning, and decision making.

Production. WebQuests commonly require students to create things they've never created before. The production aspects of the task can be scaffolded by providing students with templates, prompted writing guides, and multimedia elements and structures. By doing part of the work for students, we allow them to go beyond what they would be able to do alone. Over time, we hope, they internalize the structures we provide until they can work autonomously.

Conclusion

The WebQuest model continues to evolve. Over time, the number of high-quality WebQuests available will increase. By following the five FOCUS principles, new WebQuest creators can take advantage of what we've learned as a community and give the next generation of teachers a better place to start.

Resources

Bernie Dodge's WebQuest pages

Seven Steps Toward Better Searching:
<http://edWeb.sdsu.edu/Webquest/searching/sevensteps.html>

Specialized Search Engines and Directories page:
<http://edWeb.sdsu.edu/Webquest/searching/specialized.html>

Taskonomy page:
<http://edWeb.sdsu.edu/Webquest/taskonomy.html>

WebQuest site:
<http://edWeb.sdsu.edu/Webquest>

Others' WebQuest pages

A Forest Forever:
www.teachtheteachers.org/projects/Mbergey/index.htm

Design a Canadian Vacation:
www.cesa8.k12.wi.us/it/Webquests/canada/index.html

We Were There:
<http://babylon.k12.ny.us/usconstitution>

Witchcraft or Witchhunt:
www.teachtheteachers.org/projects/DJacobs/index.htm

Search Tools

AltaVista:
www.altavista.com

Dogpile:
www.dogpile.com

Google:
www.google.com

Internet Movie Database:
www.imdb.com

Northern Light:
www.northernlight.com

Thomas: Legislative Information on the

Internet:
<http://thomas.loc.gov>

TV Episode Guide:
<http://epguides>

master.com/texis/master/search/mysite.html?

Yahoo!:
www.yahoo.com

Scaffolding Tools

Reception:
<http://projects.edtech.sandi.net/staffdev/patterns2000/reception.html>

Transformation:
<http://projects.edtech.sandi.net/staffdev/patterns2000/transformation.html>

Production:
<http://projects.edtech.sandi.net/staffdev/patterns2000/production.html>

Other Web Sites

American Memory Collection:
<http://memory.loc.gov/ammem/mdbquery.html>

Backflip (bookmark server):
www.backflip.com

Earthcam:
www.earthcam.com

ePALS:
www.epals.com

FindSounds:
www.findsounds.com

Process Guides page:
<http://projects.edtech.sandi.net/staffdev/tpss99/processguides/index.htm>

QuickTopic:
www.quicktopic.com

References

Bergman, M. K. (2000). *The deep Web: Surfacing hidden value*. *BrightPlanet.Com* [Online]. Available: www.completeplanet.com/Tutorials/DeepWeb/index.asp.

Dodge, B. J. (1995). *Some thoughts about WebQuests* [Online]. Available: http://edWeb.sdsu.edu/courses/edtec596/about_Webquests.html.

Dodge, B. J. (2000, June). *Thinking visually with WebQuests* [Online]. Presentation at the National Educational Computing Conference, Atlanta, GA. Available: <http://edWeb.sdsu.edu/Webquest/tv/>.

Johnson, D.W., & Johnson, R. T. (2000). *Cooperative learning* [Online]. Available: www.clcrc.com/pages/cl.html.



Bernie Dodge, PhD (bdodge@mail.sdsu.edu), is a professor of educational technology at San Diego State University. He focuses on the design, implementation, and evaluation of computer-based learning environments and teaches a variety of courses on that theme. Thanks to a new federal PT³ grant, he'll be spending the next three years developing a new approach to preservice teacher education in a project called "Learning Through Cyber-Apprenticeship." For more, visit: <http://edweb.sdsu.edu/people/bdodge/bdodge.html>.